CLAIMS

1. A method for destroying or impairing target cells that comprise a lesion in the vascular system in a mammalian subject comprising:

administering to the subject a therapeutically effective amount of a photosensitizing agent, wherein said photosensitizing agent selectively binds to target cells of the lesion;

irradiating at least a portion of the subject with light at a wavelength absorbed by said photosensitizing agent, wherein said light is provided by a light source that is external to the intact body of the subject; and wherein said irradiation is at a relatively low fluence rate that results in the activation of said photosensitizing agent or said prodrug product

wherein said PDT drug is cleared from the skin and subcutaneous tissues of the subject prior to said irradiation.

2. A method for destroying or impairing target cells that comprise a lesion in the arterial vascular system in a mammalian subject comprising:

administering to the subject a therapeutically effective amount of a first conjugate comprising a first member of a ligand-receptor binding pair conjugated to an antibody or antibody fragment, wherein said antibody or antibody fragment selectively binds to a target cell or target tissue antigen;

administering to the subject a therapeutically effective amount of a second conjugate comprising a second member of the ligand-receptor binding pair conjugated to a photosensitizing agent or photosensitizing agent delivery system or prodrug, wherein the first member binds to the second member of the ligand-receptor binding pair;

irradiating at least a portion of the subject with light at a wavelength absorbed by said photosensitizing agent, wherein said light is provided by a light source that is external to the subject; and wherein said irradiation is at a relatively low fluence rate that results in the activation of said photosensitizing agent or prodrug product.

3. The method of claim 1 or 2, wherein said light source is selected from the group consisting of one or a plurality of: laser diodes, fiber lasers, LEDs, non-laser light source, cold cathode fluorescent tube, incandescent lights, halogen lights,

polymeric luminescent devices, other types of fluorescent lights, discharge lamps, and other electroluminescent devices.

4. The method of claim 1 or 2, wherein said light is directed through the skin in a direction parallel and lengthwise to the wall of a vascular vessel having the lesion.

5. The method of claim 3, wherein said laser diode is coupled to an optical fiber, and wherein said optical fiber directs said light lengthwise to the vessel wall having the lesion.

6. The method of claim 3, wherein said light emitting diode is a light emitting diode strip, and wherein said light emitting diode strip is placed over the skin overlying the lesion.

7. The method of claim 5, wherein said optical fiber diffuses said light when placed over the vessel wall having the lesion.

8. The method of claim 5, wherein said light source is a mat comprising a plurality of said optical fiber.

9. The method of claim 1 or 2, wherein said photosensitizing agent is selected from the group consisting of: indocyanine green; methylene blue; lutetium texaphyrin; toludine blue; aminolevulinic acid (ALA) and any other agent that absorbs light in a range of 600 nm -1100 nm; and wherein said agent may be delivered as a delivery system or as a prodrug, the product thereof resulting in the photosensitize agent.

10. The method of claim 1 or 2, wherein said wavelength is from about 600 nm to about 1100 nm.

11. The method of claim 10, wherein said wavelength is greater than about 700 nm.

12. The method of claim 11, wherein said light results in a single photon absorption mode by the photosensitizing agent.

13. The method of claim 9, wherein a complex, comprising said photosensitizing agent conjugated to LDL or VLDL, localizes in the lesion.

14. The method of claim 13, wherein said complex is administered intravenously.

15. The method of claim 2, wherein said target tissue antigen is selected from the group consisting of: tumor surface antigen; tumor endothelial antigen; non-tumor endothelial antigen; and tumor vessel wall antigen.

16. The method of claim 2, wherein said ligand-receptor binding pair is selected from the group consisting of: biotin-streptavidin; chemokine-chemokine receptor; growth factor-growth factor receptor; and antigen-antibody.

17. The method of claim 1 or 2, wherein said photosensitizing agent delivery system comprises a liposome delivery system consisting essentially of the photosensitizing agent.

18. The method of claim 1 or 2, wherein said light source is pulse modulated to maximize depth of tissue penetration and minimize heat generation and power consumption.

19. The method of claim 1 or 2, wherein the total fluence of the light used for irradiating is between about 30 Joules/cm^2 and about 25,000 Joules/cm^2.

20. The method of claim 1 or 2, wherein the total fluence of the light used for irradiating is between about 100 Joules/cm^2 and about 20,000 Joules/cm^2.

21. The method of claim 1 or 2, wherein the total fluence of the light used for irradiating is between about 500 Joules/cm^2 and about 10,000 Joules/cm^2.

22. An apparatus for transcutaneous photodynamic therapy of a lesion in the vascular system in a mammalian subject comprising a light source that is external to the subject and is selected from the group consisting of one or a plurality of: laser diodes; light emitting diodes; electroluminescent light sources; incandescent light sources; cold cathode fluorescent light sources; organic polymer light sources; or inorganic light sources.

23. The apparatus of claim 22, wherein said light source is at least one laser diode coupled to an optical fiber which directs said light lengthwise to the vessel wall having the lesion.

24. The apparatus of claim 23, wherein said diode is a light emitting diode strip, and wherein said light emitting diode strip may be placed over the skin overlying the lesion.